WM-F15

SERVICE MANUAL

- **Refer to MDR-E232 Service Manual or MDR-W30L Service Manual issued previously for information of headphones supplied with this set.**

Canadian Model
AEP Model
E Model

TAPE TRANSPORT MECHANISM	MF-WMF15-25

SPECIFICATIONS

Radio section

Frequency range FM: 87.6–108 MHz
AM: 530–1,605 kHz
Antenna FM: Headphone or earphone cord antenna
AM: Ferrite bar antenna

Tape player section and general

Tape track 4-track 2-channel stereo
Fast winding time Approx. 2 min. 30 sec. with Sony cassette C-60
Frequency response (DOLBY NR OFF)
30–15,000 Hz (with the TAPE selector set to CrO_2, METAL)
30–15,000 Hz (with the TAPE selector set to NORM)
Power output headphones or earphones:
25 mW × 2 (at 10% harmonic distortion) load impedance 18 Ω
Power requirements: 3 V dc
Two IEC designation R6 batteries (size AA)
External batteries (used in the optional EBP-500A battery case): two IEC designation R20 (size D)
DC IN 3 V jack accepts:
Sony AC-30 ac power adaptor (optional)
for use on 120 V ac, 60 Hz (available in Canada)
for use on (110, 120, 220 or 240 V ac, 50/60 Hz (available in other countries except for the European model)
Sony DCC-127A car battery cord (optional) for use with 12 V car battery. (For connection with the DCC-127A, the optional PC-200 dc plug adaptor is required.)

Battery life:

Batteries	FM reception	Tape playback
Sony New Super SUM-3(NS)	17	4
Sony Eveready alkaline AM-3	35	8

(hours)

For maximum performance we recommend the use of alkaline batteries.
Dimensions:
Approx. 110.3 × 88 × 32 mm (w/h/d) (4 3/8 × 3 1/2 × 1 5/16 inches)
incl. projecting controls
Approx. 108.9 × 84.5 × 30.4 mm (w/h/d) (4 3/8 × 3 3/4 × 1 1/4 inches)
not incl. projecting controls
Weight: Approx. 250 g (8.9 oz) incl. batteries, not incl. other accessories

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

STEREO CASSETTE PLAYER

SONY®

TC

MICROFILM

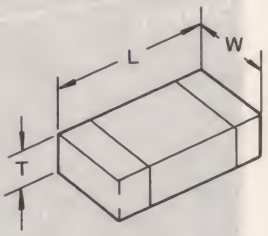
SERVICING NOTE

- **Note on Ceramic Filter Replacement**

  FM IF ceramic filters (CF2, CF3) of this set are supplied in pairs. There must be replaced in pairs when used in this set.

- **Chip components**

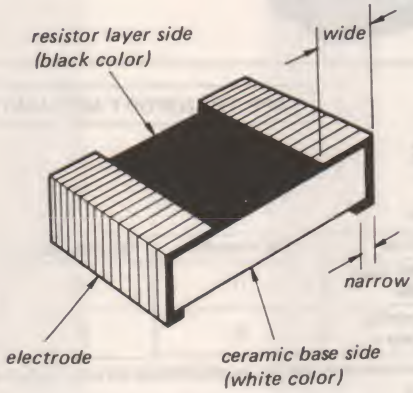
  Chip components include resistors, capacitors, transistors, diodes, coil and adjustable resistors.
  In this section, the types of resistors, ceramic capacitors, transistors and diodes which are used most frequently will be described.
  Dimension of transistors and capacitors



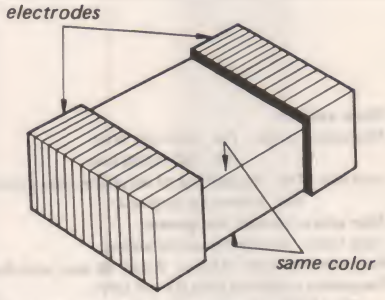
(Unit: mm)

Type	L	W	T
3216	3.2	1.6	0.45 ~ 0.6
2125	2.0	1.25	0.35 ~ 0.5

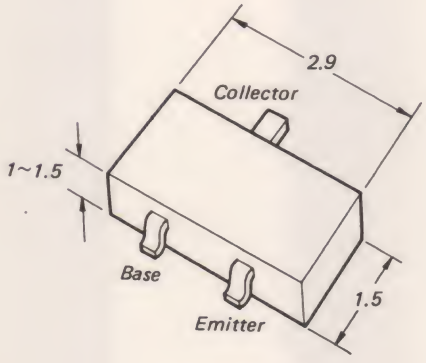
Identification



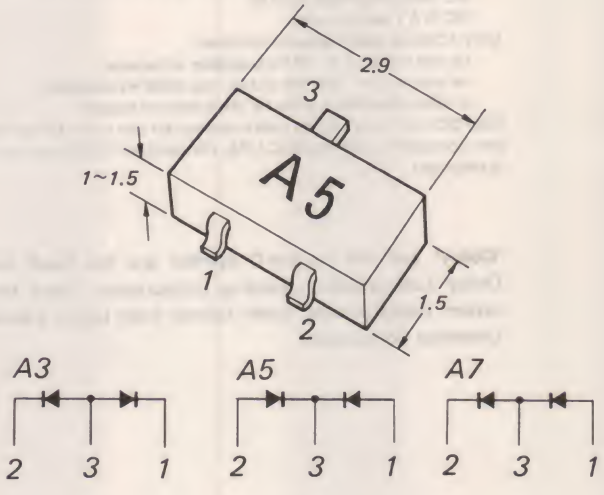
Resistor



Laminated Ceramic Capacitor



Transistor



Diode

Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

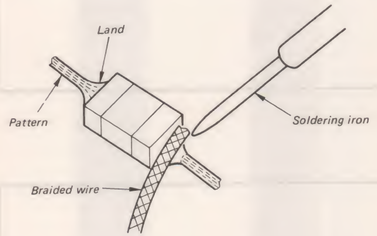
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ **Removing chip components**

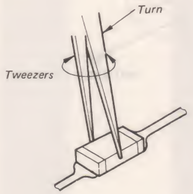
(1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.
Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ **Connecting chip components**

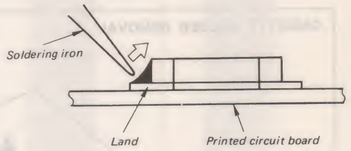
The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.

(2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



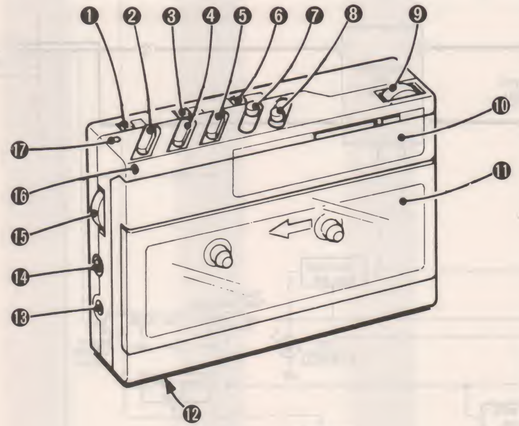
(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

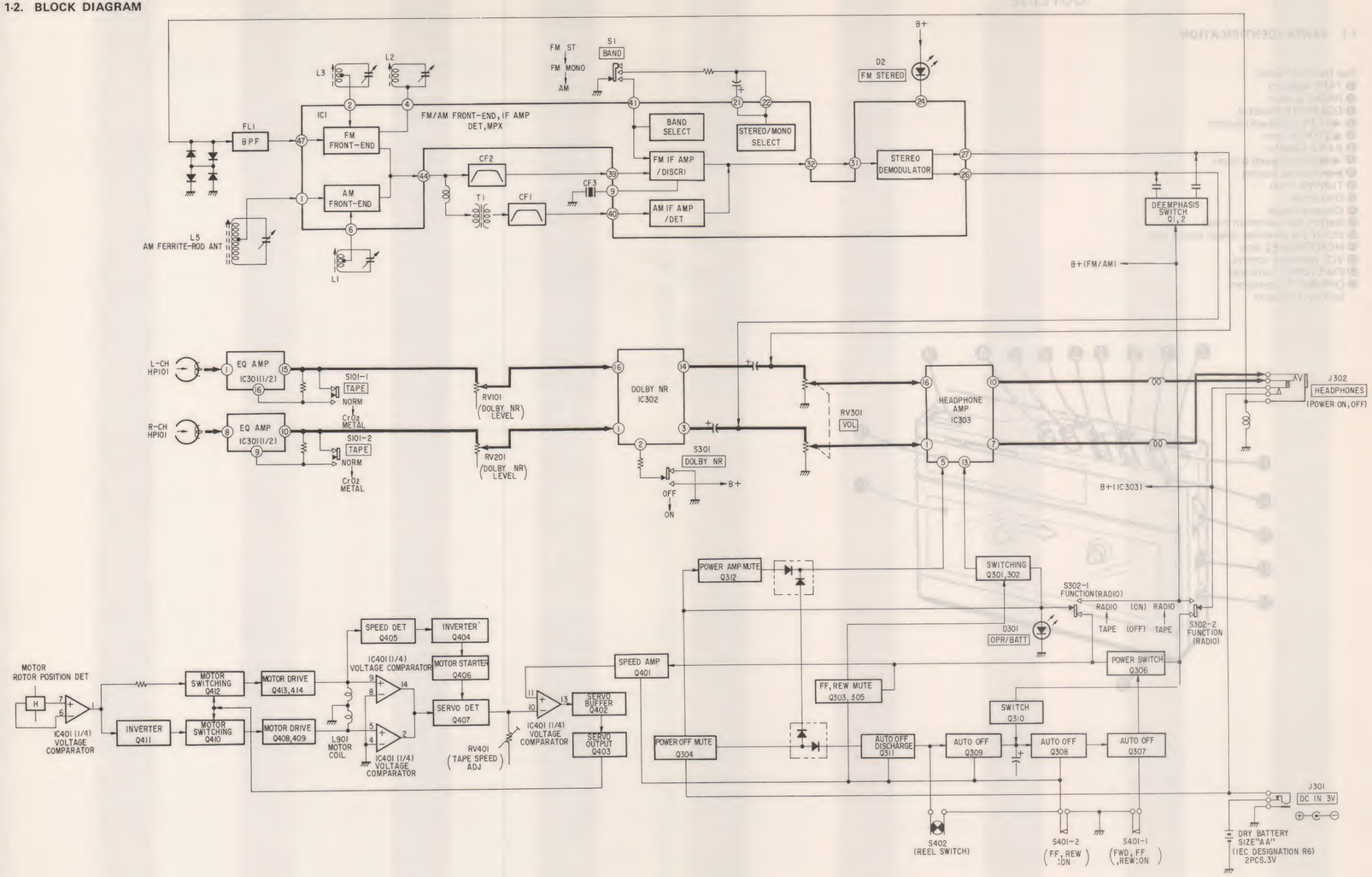
SECTION 1
OUTLINE

1-1. PARTS IDENTIFICATION

See the illustration.
❶ TAPE selector
❷ RADIO button
❸ DOLBY NR selector
❹ ◀PLAY (playback) button
❺ ■STOP button
❻ BAND selector
❼ ◀◀(fast forward) button
❽ ▶▶(rewind) button
❾ TUNING knob
❿ Dial scale
⓫ Cassette holder
⓬ Battery compartment (rear)
⓭ DC IN 3 V (external power input) jack
⓮ HEADPHONES jack
⓯ VOL (volume) control
⓰ FM STEREO indicator
⓱ OPR/BATT (operation/ battery) indicator



1-2. BLOCK DIAGRAM



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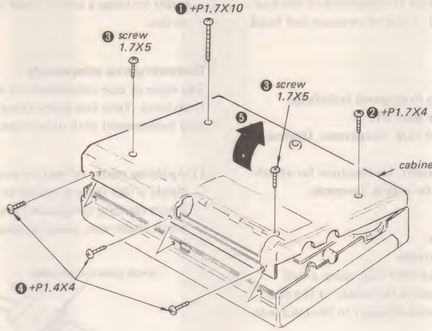
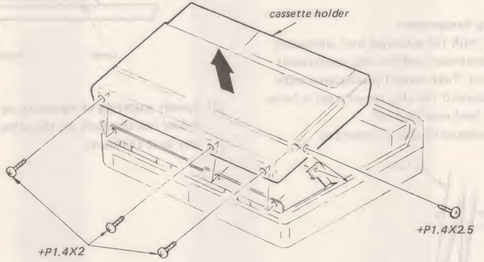
SECTION 2
REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

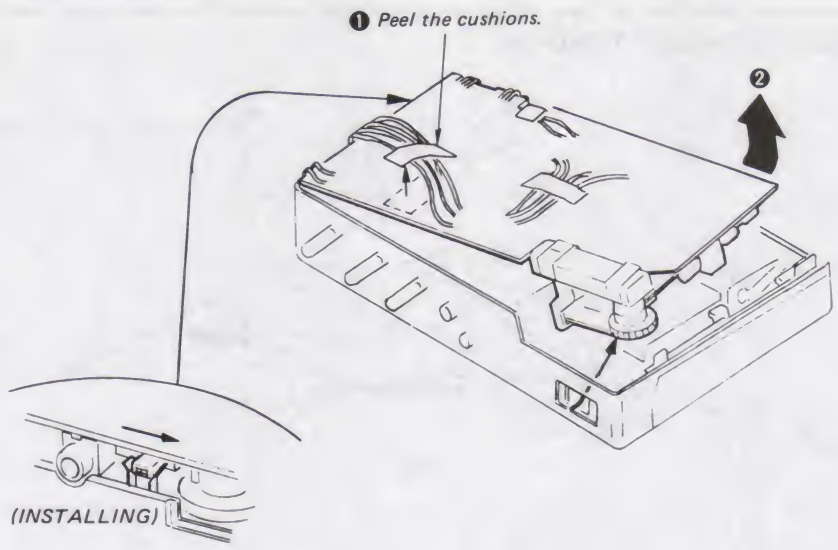
CABINET REMOVAL



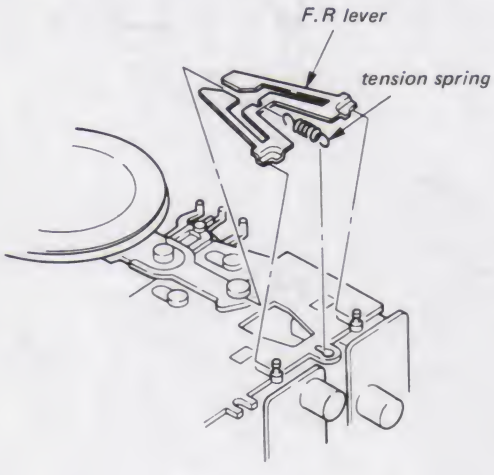
CASSETTE HOLDER REMOVAL



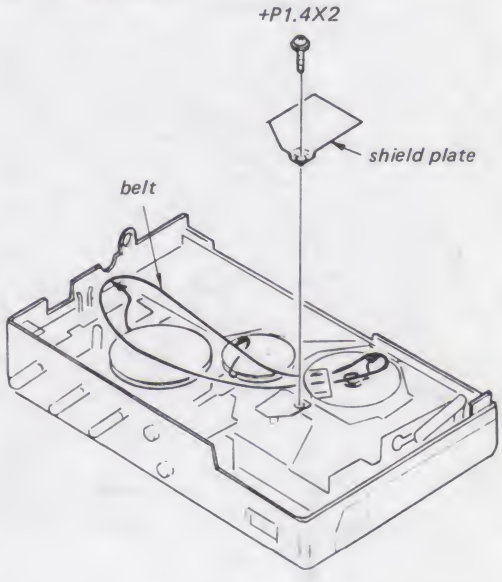
MAIN BOARD REMOVAL



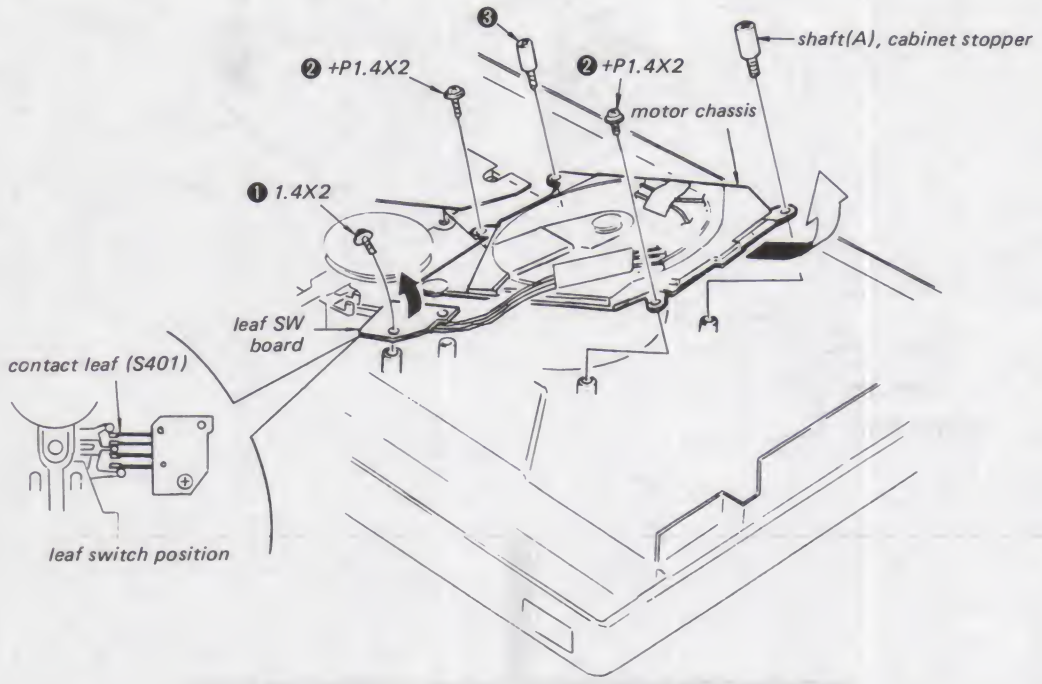
F/R LEVER REMOVAL



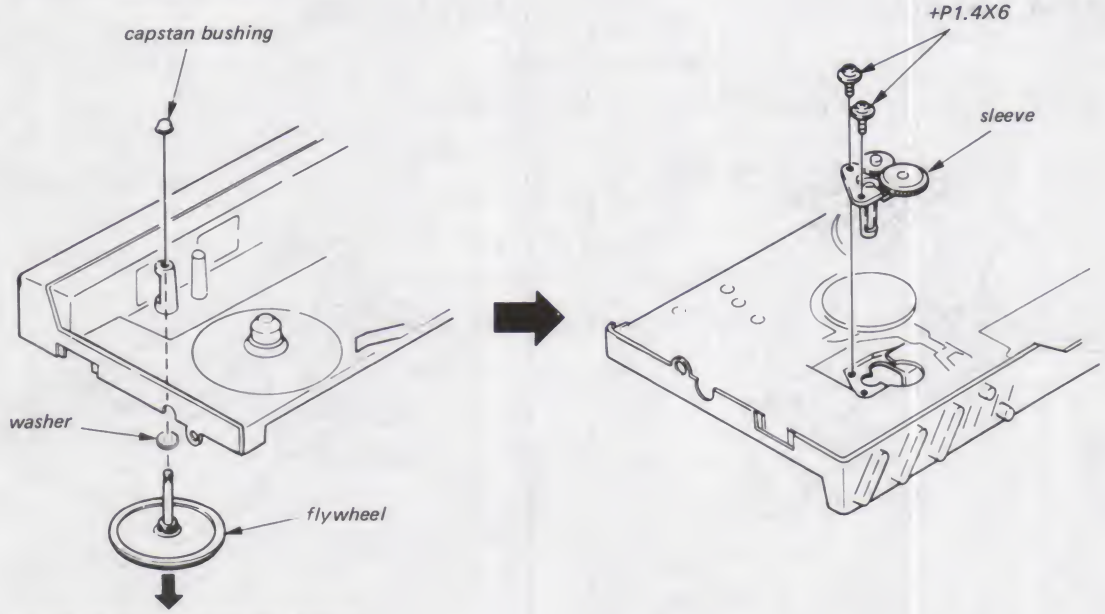
BELT REMOVAL



LEAF SW BOARD / MOTOR CHASSIS REMOVAL



FLYWHEEL / SLEEVE REMOVAL

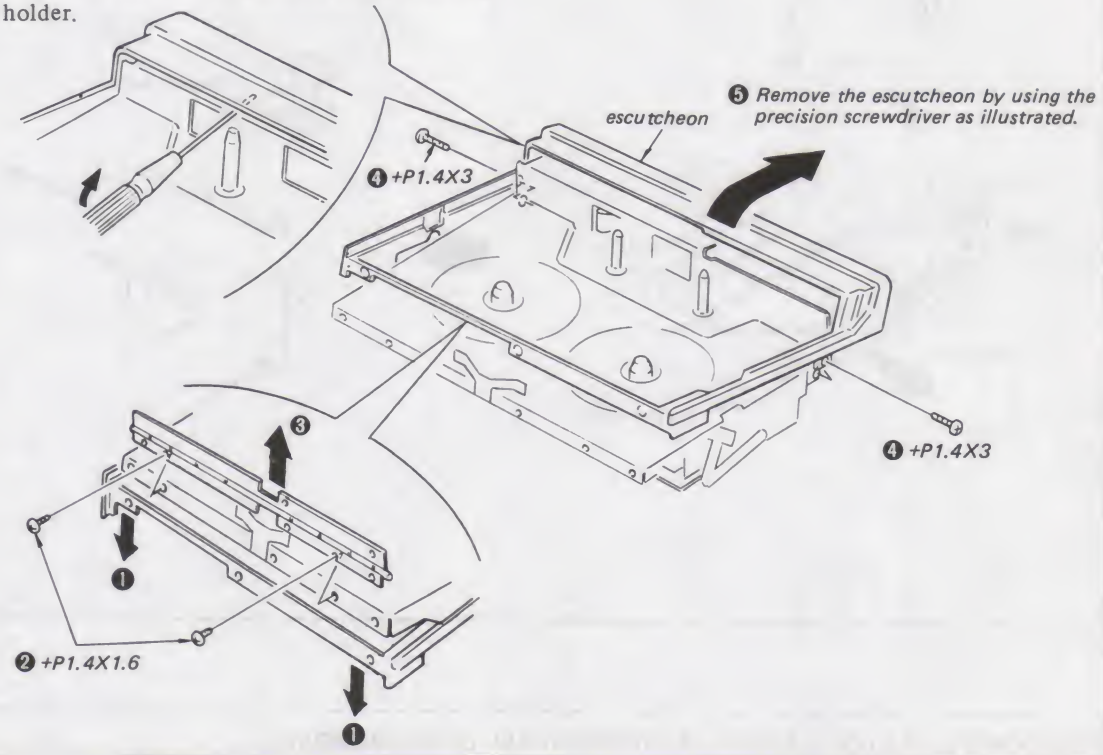


After removing the capstan bushing, be sure to use the new one.

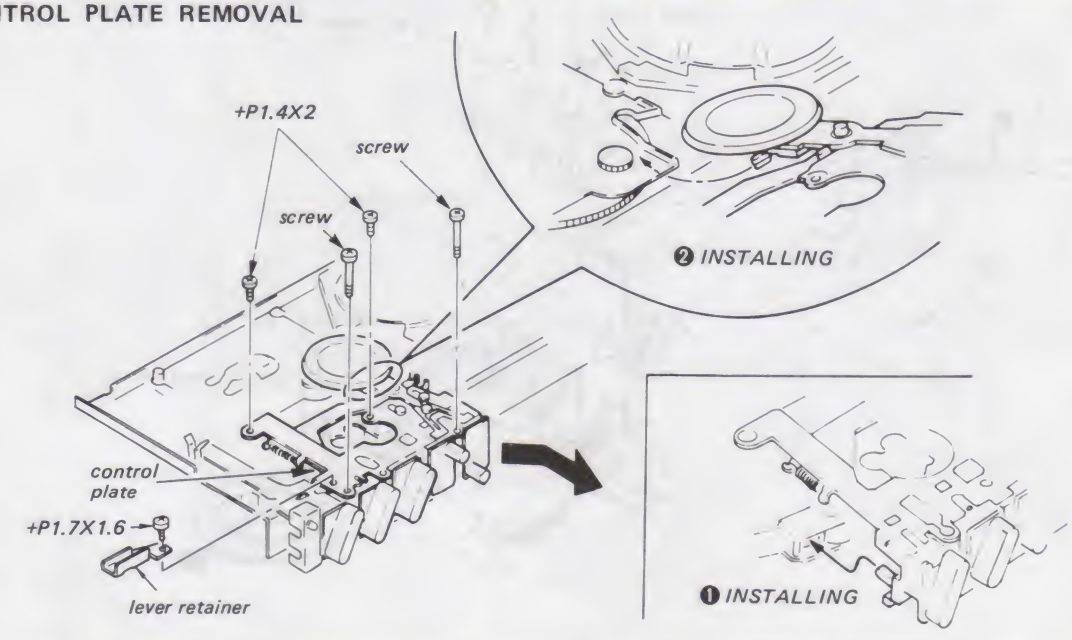
DIAL CORD STRINGING
(Refer to page 14)

ESCUTCHEON REMOVAL

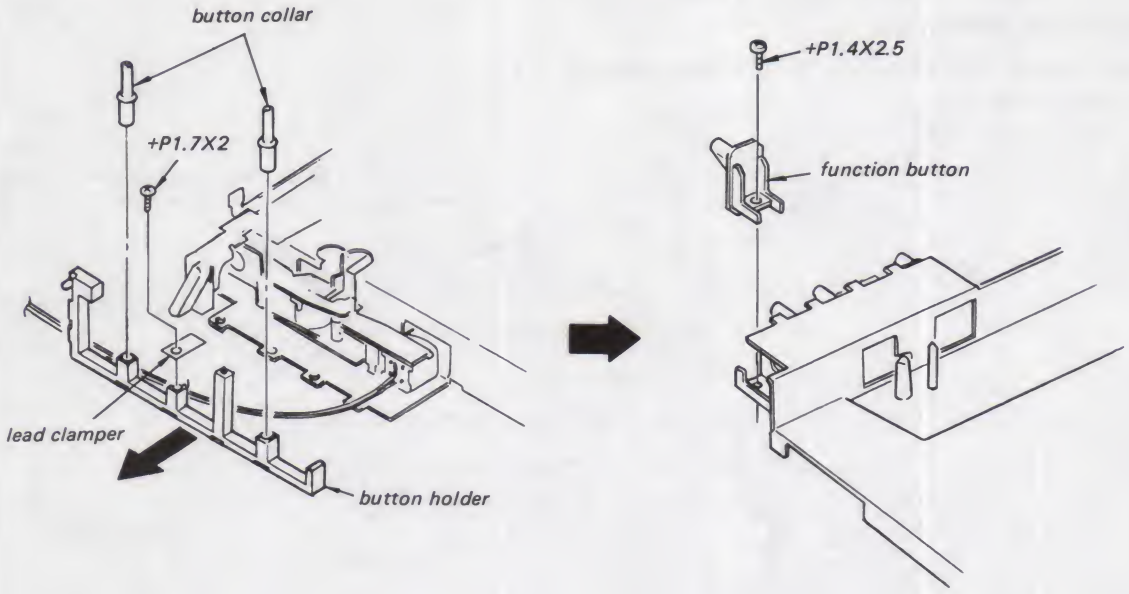
Be sure to perform the escutcheon removal after removing the cassette holder.



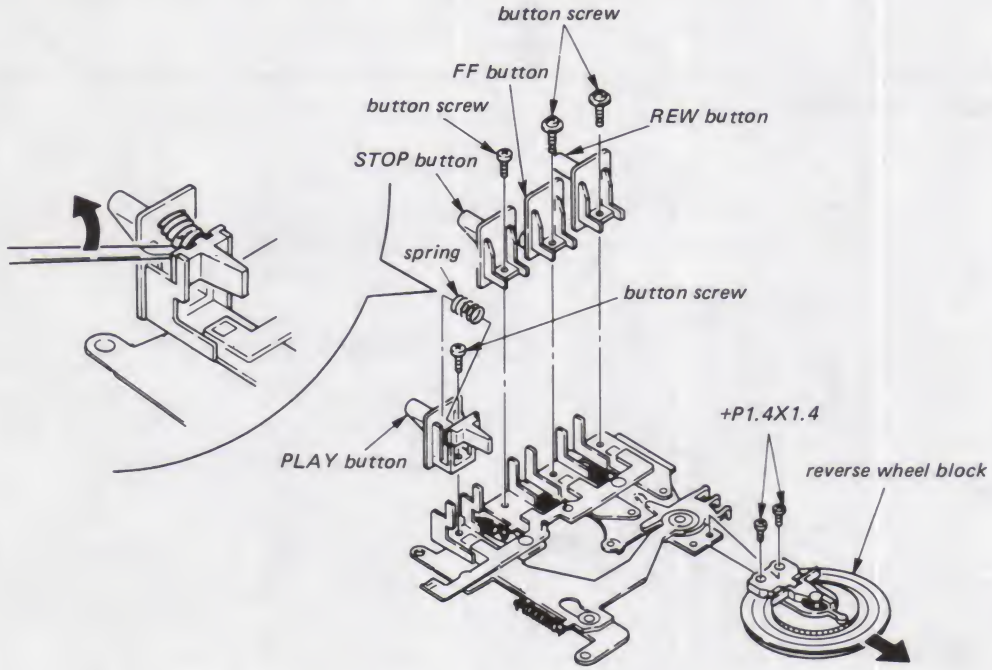
CONTROL PLATE REMOVAL



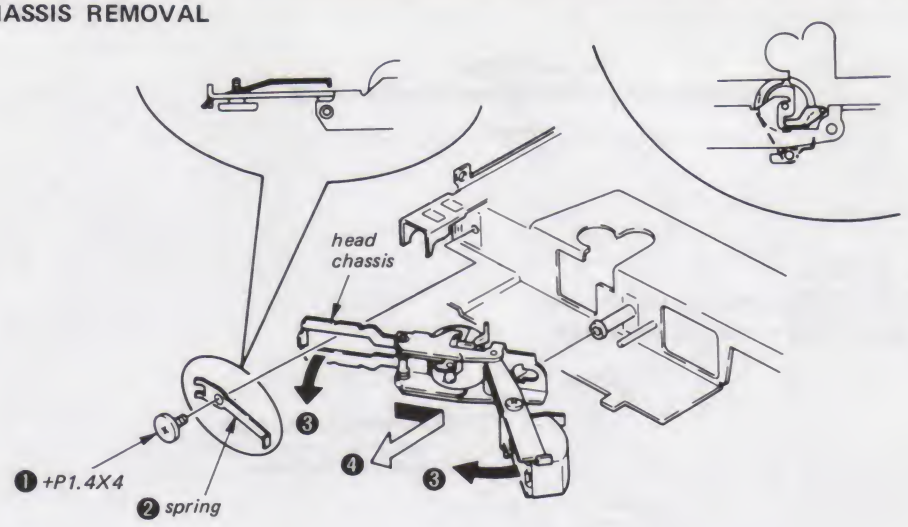
BUTTON HOLDER / FUNCTION BUTTON (RADIO) REMOVAL

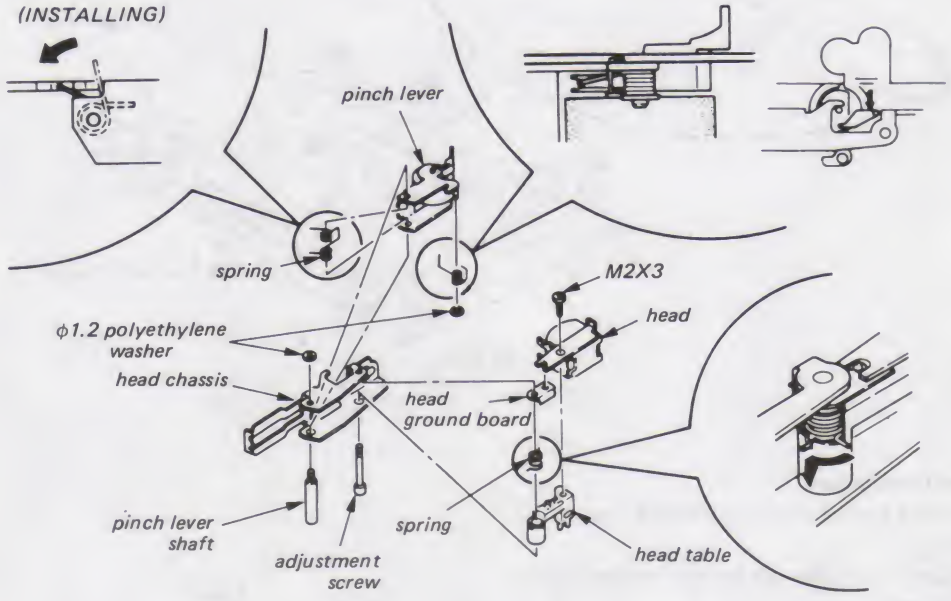


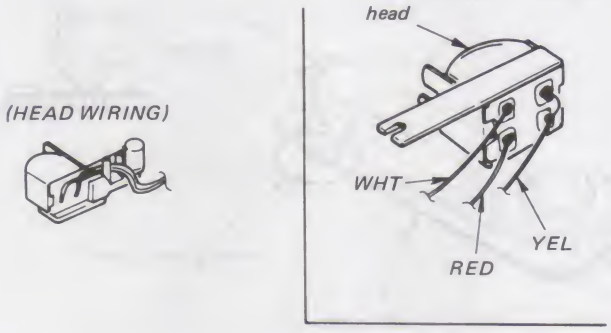
BUTTON (PLAY, STOP, FF, REW), REVERSE WHEEL BLOCK REMOVAL



HEAD CHASSIS REMOVAL

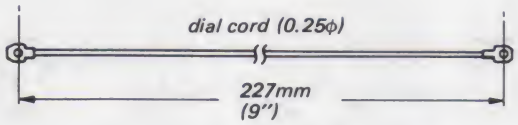






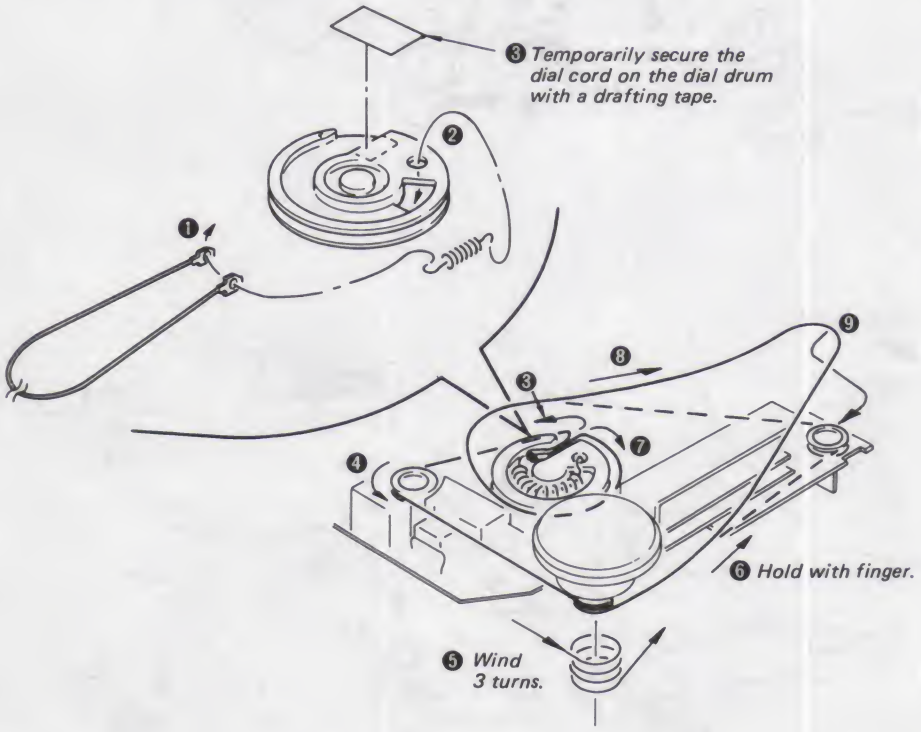
DIAL CORD STRINGING

1. Preparation



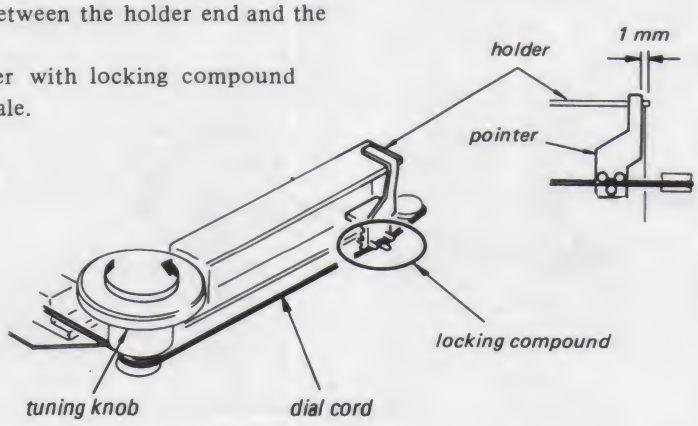
2. Stringing

1) Remove the bar antenna.
2) Turn the dial drum fully counterclockwise and string the dial cord in the numerical order given.



3. Dial Pointer Installation

1) Turn the tuning knob fully counterclockwise.
2) Set the pointer.
3) Set the distance between the holder end and the pointer to 1mm.
4) Secure the pointer with locking compound after setting the scale.



SECTION 3
ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

   playback head — pinch roller
   capstan — rubber belts

2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. The adjustments should be performed with the rated power supply voltage (2.5V) unless otherwise noted.

3-1. MECHANICAL ADJUSTMENTS

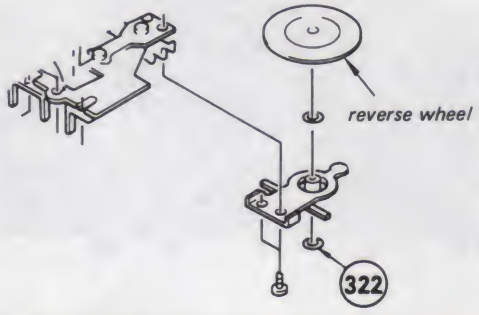
Torque Measurement

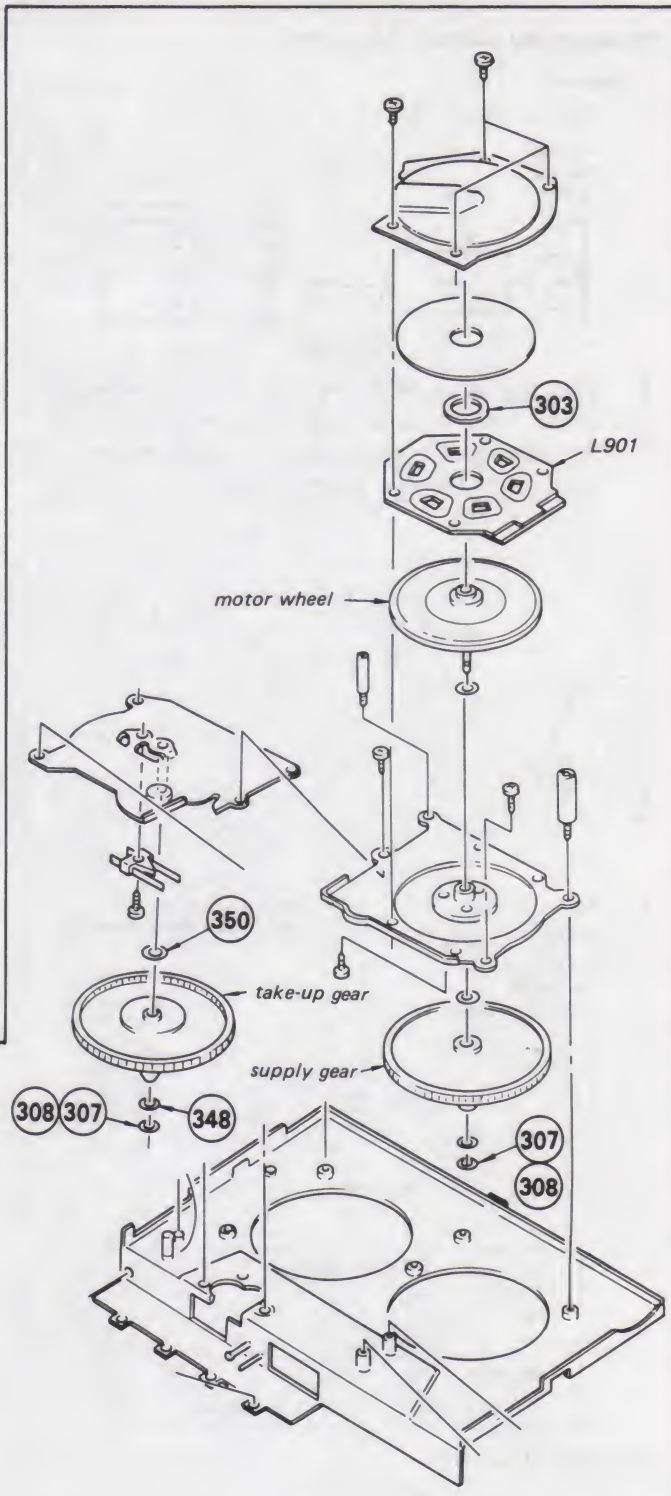
Perform with 2.5V DC power.

	Torque meter	Meter reading
FWD	CQ-102C	20 – 40 g·cm (0.28 – 0.56 oz·inch)
FF,REW	CQ-201B	More than 60 g·cm (More than 0.83 oz·inch)
Back Tension	CQ-102C	0 – 2.5 g·cm (0 – 0.035 oz·inch)
Tape Pulling Force	CQ-403	More than 45 g·cm (More than 0.62 oz·inch)

Thrust Clearance Adjustment

	Thrust clearance	Adjustment Parts (Refer to exploded views and parts list.)
Motor wheel	0.2mm	No. 303
Take-up reel	0.05 – 0.15mm	No. 307/308/348/350
Supply reel	0.05 – 0.15mm	No. 307/308
Reverse wheel	0.05 – 0.15mm	No. 322



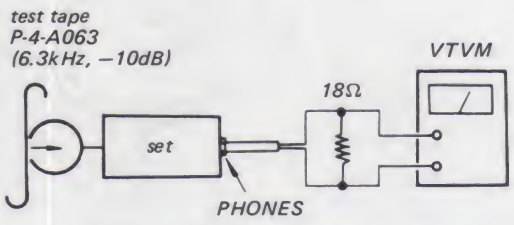


3-2. ELECTRICAL ADJUSTMENTS

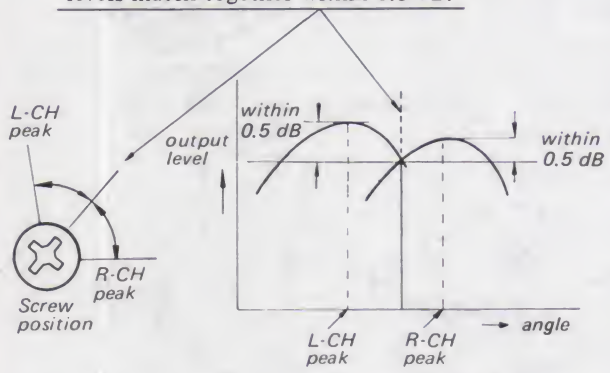
Playback Head Azimuth Adjustment

Procedure:

1. Mode: playback

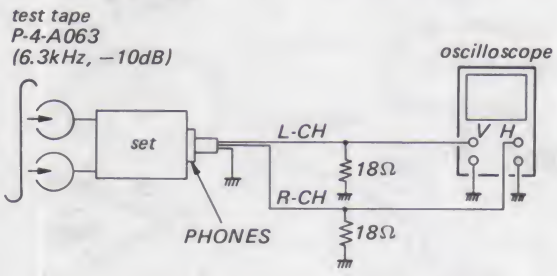


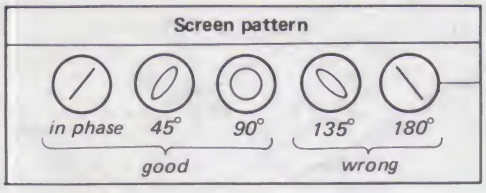
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.



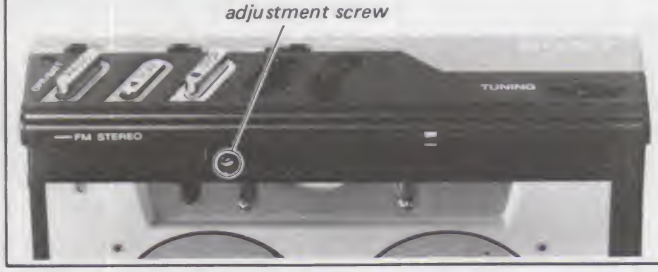
Note) After the adjustments, do not apply locking compound.

3. Phase Check
   Mode: playback





Adjustment Location:



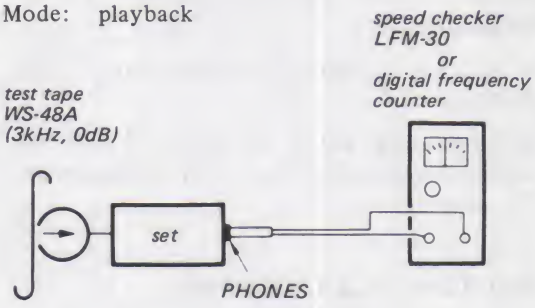
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

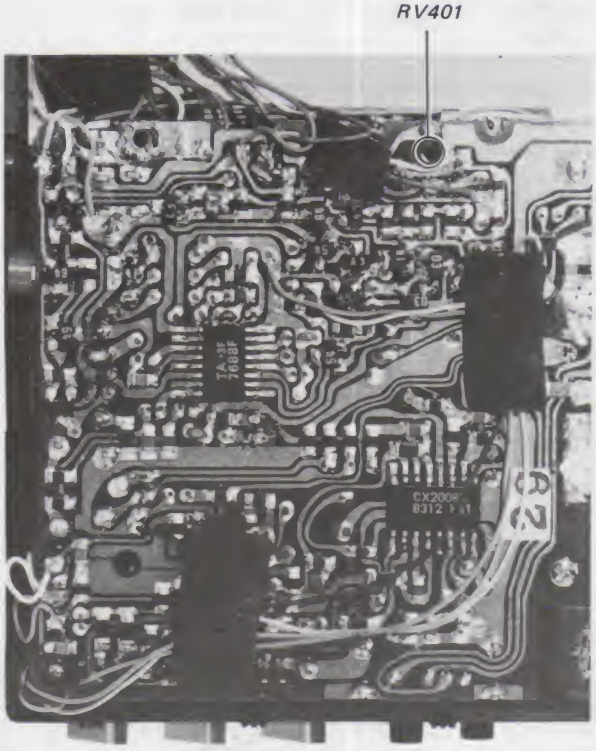
Mode: playback



Specification:

Speed checker	Digital frequency counter
±2%	2,940 – 3,060 Hz

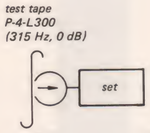
Adjustment Location:



Dolby NR Level Adjustment

Setting:

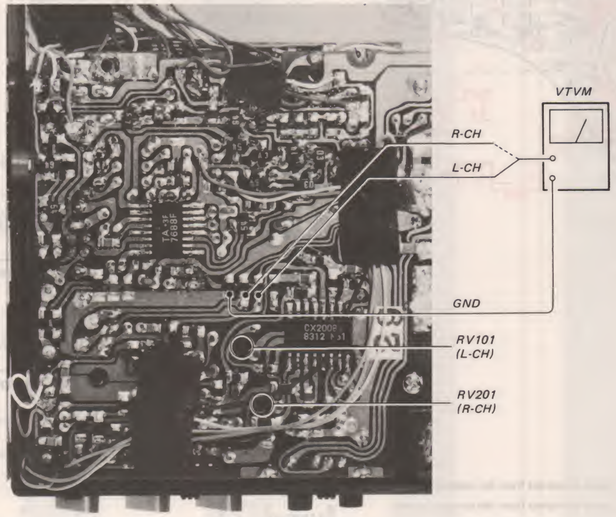
TAPE switch: NORM
DOLBY NR switch: off



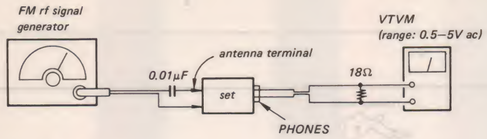
Procedure:

Adjust RV101 (L-CH), RV201 (R-CH) to obtain −27.7 dB ± 5 dB (0.03 V to 0.034 V) output level.

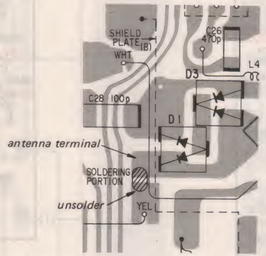
Adjustment Location: main board



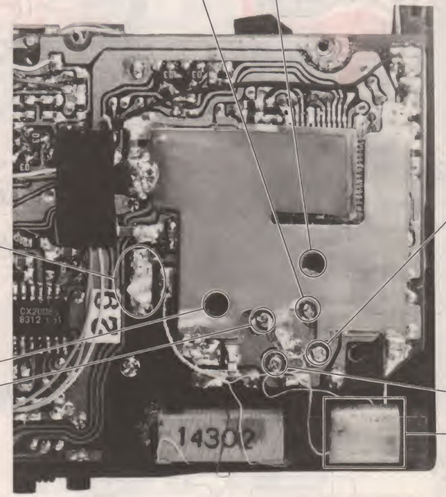
FM section



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.
- Solder after the adjustment.



FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum VTVM reading.	
109.5MHz	86.5MHz
CT2	L2

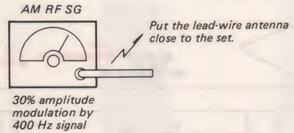


86.5MHz	L3
109.5MHz	CT3
Adjust for a maximum VTVM reading.	
FM TRACKING ADJUSTMENT	

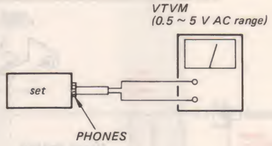
AM section

- **Setting:**

  Band Switch: AM

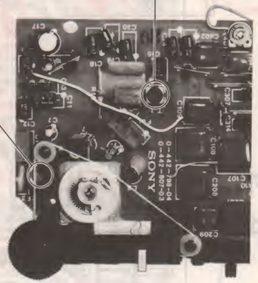


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
1,680kHz	520kHz
CT1	L1

AM IF ALIGNMENT
Adjust for a maximum reading on VTVM.
455kHz
T1

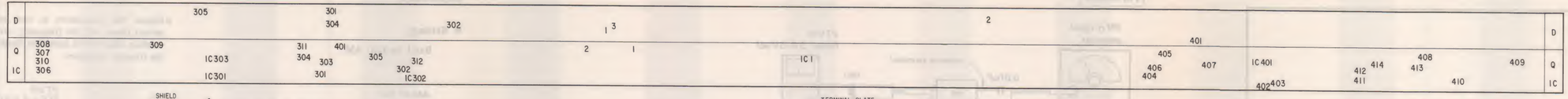


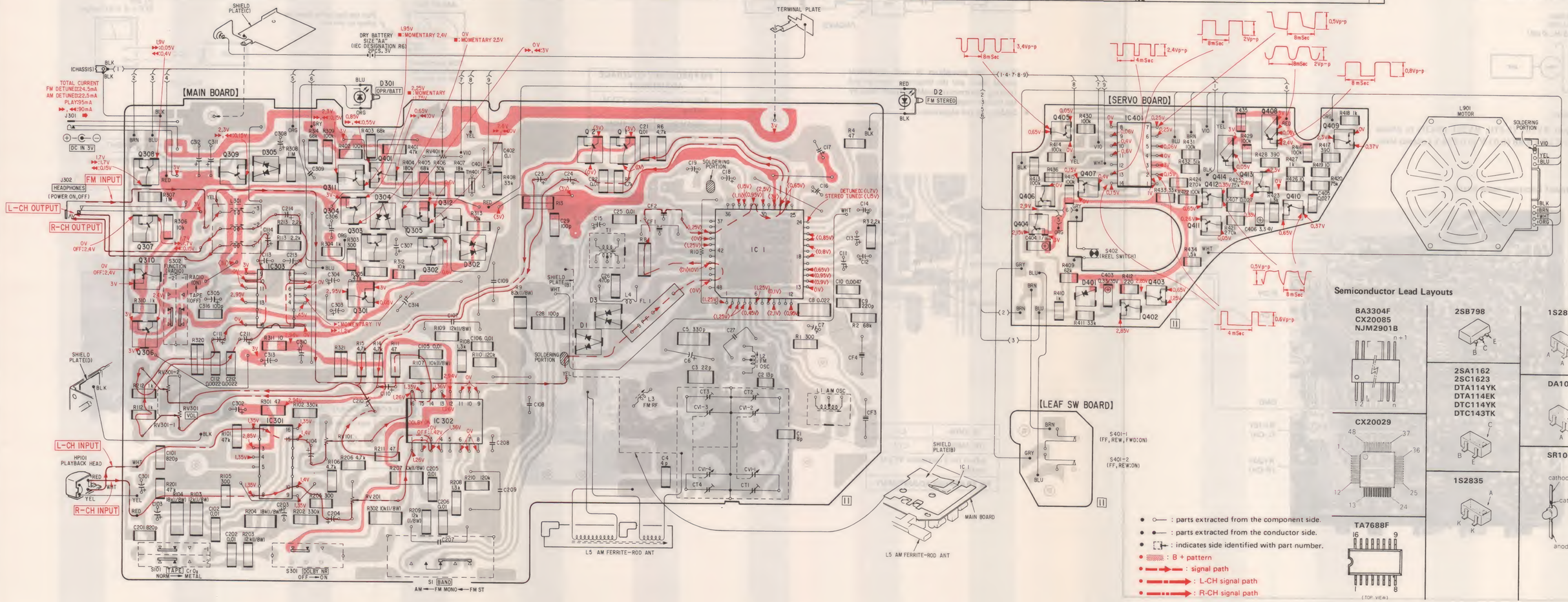
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT4	1,400kHz
L5	620kHz

WM-F15 WM-F15

4-1. MOUNTING DIAGRAM

– Conductor Side –





Semiconductor Lead Layouts

BA3304F
CX20085
NJM2901B

2SB798

1S2837

2SA1162
2SC1623
DTA114YK
DTA114EK
DTC114YK
DTC143TK

DA106K

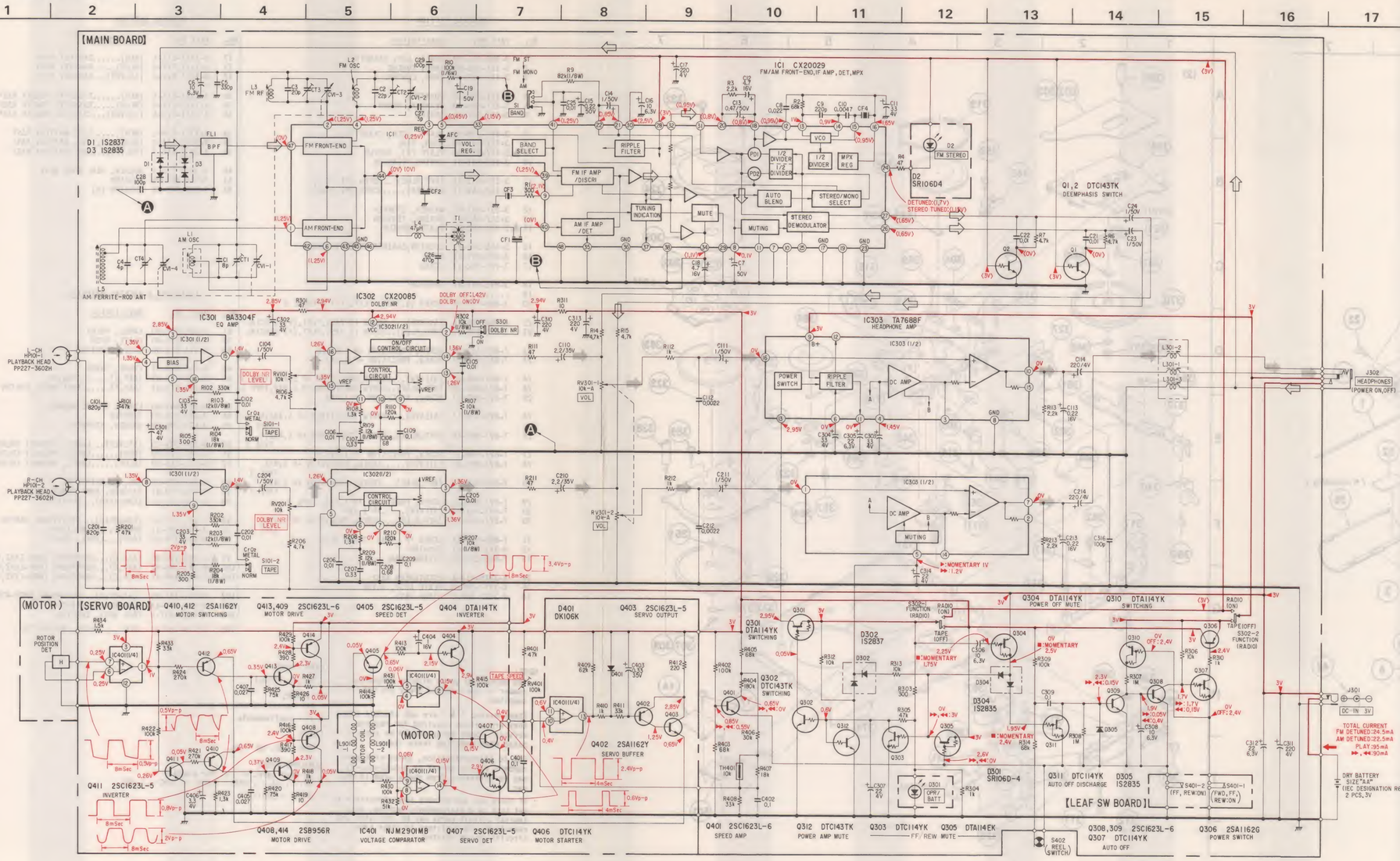
CX20029

1S2835

SR106D

TA7688F

- ○— : parts extracted from the component side.
- —○ : parts extracted from the conductor side.
- —|— : indicates side identified with part number.
- ▒▒ : B + pattern
- ——→ : signal path
- ——→ : L-CH signal path
- ——→ : R-CH signal path



- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ⅛W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM.
  ( ) : AM ▶▶ : FF
  < > : FM ◀◀ : REW
  ■ : STOP
- Voltage variations may be noted due to normal production tolerances.
- Total current is measured with no cassette installed.
- Switch

Ref. No.	Switch	Position
S1	BAND	FM ST
S101	TAPE	NORM
S301	DOLBY NR	OFF
S302	FUNCTION (RADIO)	TAPE (OFF)

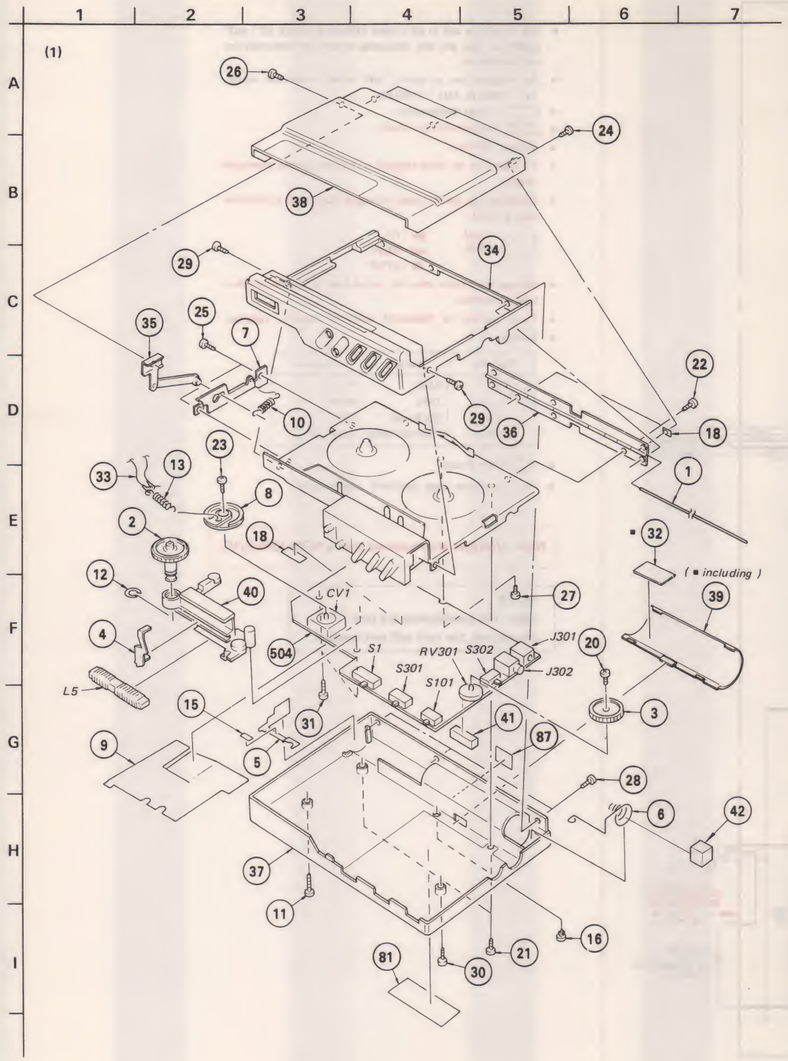
- ⇨ : signal path
- ▬ : cassette tape playback signal path

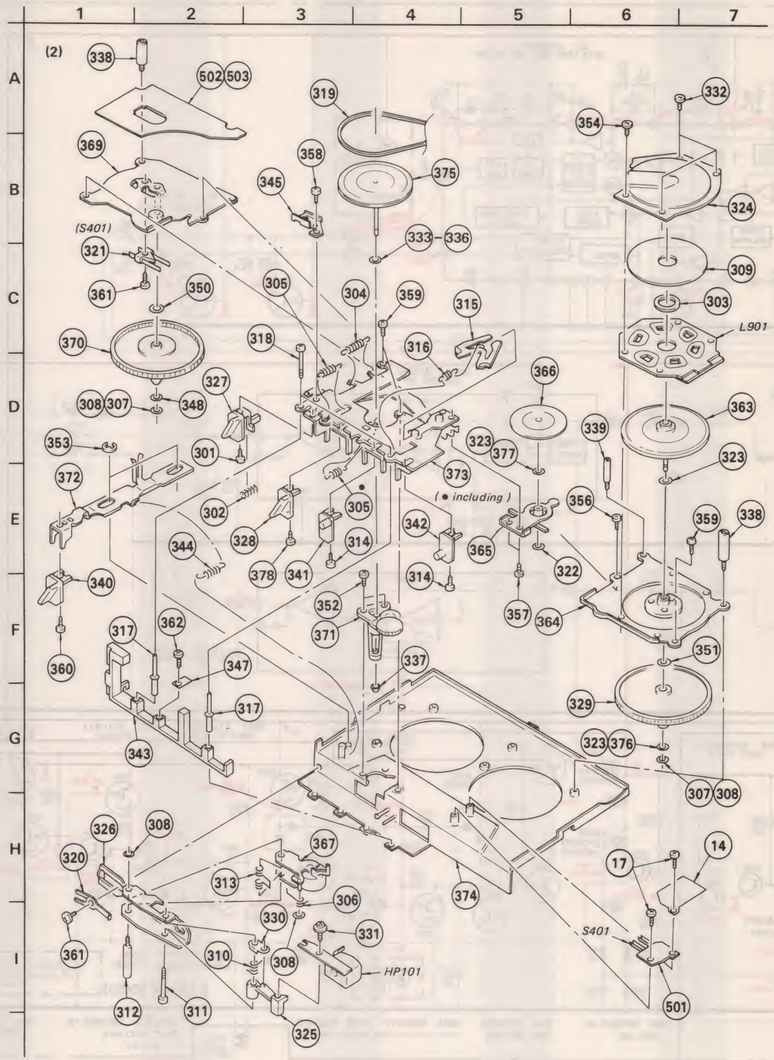
Note: Voltages are measured with a VOM (50kΩ/V).

NOTE
When the headphones are not connected, the unit will not operate.

SECTION 5

EXPLODED VIEWS AND PARTS LIST





GENERAL SECTION

No.	Part No.	Description
1	3-308-411-00	SHAFT, LID, CASSETTE
2	3-317-521-00	KNOB, TUNING
3	3-317-522-00	KNOB, CONTROL
4	3-317-523-00	POINTER
5	3-317-526-00	TERMINAL BOARD
6	3-317-527-00	SPRING
7	3-317-529-00	PLATE, LOCK, CASSETTE
8	3-317-535-00	DRUM, DIAL
9	3-317-537-00	PLATE (B), SHIELD
10	3-317-551-01	SPRING, TENSION
11	3-317-552-01	(RED,BLUE)...SCREW (M1.7X10)
11	3-317-552-11	(SILVER).....SCREW (M1.7X10)
12	3-317-557-01	WASHER, STOPPER
13	3-317-558-01	SPRING, TENSION
14	3-317-560-01	PLATE, SHIELD
15	3-485-343-01	CUSHION,CABINET UPPER 10X7X0.5
16	3-545-657-11	BUSH
17	3-703-502-11	SCREW
18	3-831-441-XX	CUSHION
19	.....	
20	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL A
21	3-880-990-11	(SILVER)....SCREW (1.7X5),FLAT,(+) SPECIAL
21	3-880-990-21	(RED,BLUE)..SCREW (1.7X5),FLAT,(+) SPECIAL
22	7-627-551-08	SCREW, PRECISION +P 1.4X1.6
23	7-627-552-37	SCREW, PRECISION +P 1.7X3
24	7-627-850-07	(SILVER)....SCREW,PRECISION +P 1.4X2,TYPE 3
24	7-627-850-08	(RED,BLUE)..SCREW,PRECISION +P 1.4X2,TYPE 3
25	7-627-850-07	SCREW, PRECISION +P 1.4X2
26	7-627-850-17	(SILVER)....SCREW, PRECISION +P 1.4X2.5, TYPE 3
26	7-627-850-18	(RED,BLUE)..SCREW, PRECISION +P 1.4X2.5, TYPE 3
27	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
28	7-627-850-67	(SILVER).....SCREW, PRECISION +P 1.4X4, TYPE 3
28	7-627-850-68	(RED,BLUE)...SCREW, PRECISION +P 1.4X4, TYPE 3
29	7-627-850-28	SCREW, PRECISION +P 1.4X3, TYPE 3
30	7-627-852-17	(SILVER).....+P 1.7X4
30	7-627-852-18	(RED,BLUE)...SCREW, PRECISION +P 1.7X4, TYPE 3
31	7-685-103-14	SCREW +P 2X5 TYPE2 SLIT
32	9-911-815-01	CUSHION
33	7-633-120-52	STRING, DIAL
34	A-3235-314-A	ESCUTCHEON ASSY
35	X-3317-505-0	PLATE ASSY, SLIDE
36	X-3317-506-0	HINGE ASSY

GENERAL SECTION

No.	Part No.	Description
37	X-3317-512-4	(RED).....CABINET ASSY
37	X-3317-512-5	(BLUE).....CABINET ASSY
37	X-3317-512-6	(SILVER)...CABINET ASSY
38	X-3317-513-4	(RED).....CASSETTE HOLDER ASSY
38	X-3317-513-5	(BLUE).....CASSETTE HOLDER ASSY
38	X-3317-513-6	(SILVER)...CASSETTE HOLDER ASSY
39	X-3317-514-1	(RED).....LID, BATTERY ASSY
39	X-3317-514-2	(BLUE).....LID, BATTERY ASSY
39	X-3317-514-3	(SILVER)...LID, BATTERY ASSY
40	X-3317-515-1	HOLDER, DIAL CORD ASSY
41	3-553-567-00	CUSHION
42	9-911-841-XX	CUSHION (B)

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
81	3-305-947-00	LABEL, DOLBY
82	3-317-536-00	PLATE, OPEN
83	3-317-545-00	CASE, CARRYING
84	3-317-569-01	FRAME, INNER
85	3-317-570-01	(AEP,E).....CUSHION
86	3-317-571-01	(AEP,E).....INDIVIDUAL CARTON
87	3-701-999-00	LABEL, SERIAL NUMBER
88	3-578-259-00	STOPPER
89	3-579-788-00	WASHER, STOPPER
90	3-701-309-00	(SILVER)...LABEL, PRODUCT COLOR
91	3-701-311-00	(RED).....LABEL, PRODUCT COLOR
92	3-701-314-00	(BLUE).....LABEL, PRODUCT COLOR
93	3-701-625-00	BAG, POLYETHYLENE
94	3-703-710-01	STICKER, SONY SYMBOL (12)
95	3-317-579-01	(Canadian)...CUSHION
96	3-317-575-01	(Canadian)...INDIVIDUAL CARTON
97	3-773-782-11	MANUAL, INSTRUCTION
98	4-310-379-00	(AEP)...LABEL, NEMKO
99	8-951-168-90	(AEP,E)...HEADPHONE (MDR-E232,SILVER)
100	8-951-168-92	(AEP,E)...HEADPHONE (MDR-E232,RED)
101	8-951-168-95	(AEP,E)...HEADPHONE (MDR-E232,VIOLET)
102	8-951-187-90	(Canadian)...HEADPHONE (MDR-W30L)
103	9-911-837-XX	CUSHION (B), FILTER
104	X-3317-507-1	CASE ASSY, CARRING
105	3-773-782-41	(AEP).....MANUAL, INSTRUCTION

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CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

MECHANISM SECTION

No.	Part No.	Description
301	3-305-528-21	SCREW, STOPPER
302	3-315-331-00	SPRING, COMPRESSION
303	3-315-332-01	SPACER
303	3-315-332-11	SPACER
303	3-315-332-21	SPACER
304	3-315-341-00	SPRING, TENSION (POWER TENSION)
305	3-315-343-00	SPRING, TENSION (POWER TENSION)
306	3-315-357-00	SPRING
307	3-315-384-01	WASHER, STOPPER
308	3-315-384-11	WASHER, STOPPER
308	3-315-384-21	WASHER, STOPPER
308	3-315-384-31	WASHER, STOPPER
308	3-315-384-41	WASHER, STOPPER
309	3-315-390-00	PLATE, HYSTERESIS
310	3-315-391-00	SPRING
311	3-315-392-00	SCREW, ADJUSTMENT
312	3-315-393-00	SHAFT, PINCH LEVER
313	3-315-394-00	SPRING
314	3-315-395-00	SCREW, BUTTON
315	3-315-396-00	LEVER (C), F.R
316	3-315-397-00	SPRING, TENSION (POWER TENSION)
317	3-315-399-00	COLLAR, BUTTON
318	3-315-404-00	SCREW
319	3-315-405-00	BELT
320	3-315-406-00	SPRING
321	3-315-412-00	CONTACT, OUTSERT
322	3-315-414-00	WASHER
323	3-315-415-00	WASHER (1.5-2.3)
324	♦;3-315-419-00	PLATE, SHIELD
325	3-315-430-00	TABLE, HEAD
326	3-315-431-00	CHASSIS, HEAD
327	3-315-432-11	BUTTON, PLAY
328	3-315-435-11	BUTTON, STOP
329	3-315-436-00	GEAR (OUTSERT), SUPPLY REEL
330	3-315-463-00	PLATE, GROUND, HEAD
331	3-315-484-02	SCREW (M2X3), HEAD, WASHER
332	3-315-485-01	SCRWE (M1.4X2.3), PRECISION
333	3-315-495-01	WASHER
334	3-315-495-11	WASHER
335	3-315-495-21	WASHER
336	3-315-495-31	WASHER
337	3-317-561-01	BUSHING, CAPSTAN
338	3-317-502-00	SHAFT (A), CABINET STOPPER
339	3-317-508-00	SHAFT (A), PC BOARD
340	3-317-511-00	BUTTON, FUNCTION

MECHANISM SECTION

No.	Part No.	Description
341	3-317-512-00	BUTTON, FF
342	3-317-513-00	BUTTON, REW
343	3-317-515-00	HOLDER, BUTTON
344	3-317-559-01	SPRING, TENSION
345	♦;3-317-564-01	RETAINER, LEVER
346	.....	
347	♦;3-317-566-01	RETAINER, LEAD
348	3-317-701-01	WASHER
348	3-317-701-11	WASHER
349	.....	
350	3-317-703-01	SPACER (E)
350	3-701-438-01	WASHER
350	3-701-438-11	WASHER, 2.5
351	3-701-433-01	WASHER, 5
351	3-701-433-11	WASHER
352	3-703-502-01	SCREW 1.4X1.6
353	7-624-105-04	STOP RING 2.3, TYPE -E
354	3-317-706-01	SCREW (1.4X2.3)
355	.....	
356	7-627-551-17	+P 1.4X2.0, TYPE 1
357	7-627-850-47	SCREW, PRECISION +P 1.4X1.6
358	7-627-552-27	SCREW, PRECISION +P 1.7X2
359	7-627-850-07	SCREW, PRECISION +P 1.4X2
360	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
361	7-627-850-37	SCREW, PRECISION +P 1.4X1.4
362	7-627-851-27	SCREW, PRECISION +P 1.4X5
363	A-3133-182-A	WHEEL BLOCK ASSY, MOTOR
364	A-3133-195-A	RIVETING ASSY, MOTOR SLEEVE
365	X-3315-307-0	LEVER (B) ASSY, FR
366	X-3315-308-0	WHEEL ASSY, REVERSE
367	X-3315-311-0	PINCH LEVER ASSY
368	.....	
369	X-3315-314-0	CHASSIS ASSY, TAKE-UP REEL
370	X-3315-315-0	GEAR ASSY, TAKE-UP REEL
371	X-3315-343-1	SLEEVE COMP ASSY
372	X-3317-502-0	LEVER ASSY, FUNCTION
373	X-3317-503-0	PLATE ASSY, CONTROL
374	A-3125-534-A	CHASSIS ASSY, REEL
375	X-3317-508-1	FLYWHEEL ASSY
376	3-315-415-11	WASHER
377	3-315-416-00	WASHER
378	3-305-528-11	SCREW, STOPPER

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SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
501	♦;1-611-683-00	PC BOARD, LEAF SW		
502	♦;1-611-707-00	PC BOARD, SERVO		
503	♦;A-3215-535-A	PC BOARD ASSY, SERVO		
504	♦;A-3215-547-A	PC BOARD ASSY, MAIN		
C1	1-163-225-00	CERAMIC CHIP 8PF	0.25PF	50V
C2	1-163-361-91	CERAMIC CHIP 22PF	5%	50V
C3	1-163-294-91	CERAMIC CHIP 20PF	5%	50V
C4	1-163-151-00	CERAMIC CHIP 4PF	0.25PF	50V
C5	1-163-041-00	CERAMIC CHIP 330PF	10%	50V
C6	1-124-435-00	ELECT 10MF	20%	6.3V
C7	1-124-438-00	ELECT 1MF	20%	50V
C8	1-163-063-00	CERAMIC CHIP 0.022MF	10%	50V
C9	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C10	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C11	1-124-431-00	ELECT 33MF	20%	4V
C12	1-124-461-11	ELECT 4.7MF	20%	16V
C13	1-124-465-00	ELECT 0.47MF	20%	50V
C14	1-124-438-00	ELECT 1MF	20%	50V
C15	1-124-464-11	ELECT 0.22MF	20%	50V
C16	1-124-435-00	ELECT 10MF	20%	6.3V
C17	1-124-434-00	ELECT 220MF	20%	4V
C18	1-124-461-11	ELECT 4.7MF	20%	16V
C19	1-124-438-00	ELECT 1MF	20%	50V
C21	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C22	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C23	1-124-438-00	ELECT 1MF	20%	50V
C24	1-124-438-00	ELECT 1MF	20%	50V
C25	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C26	1-163-267-00	CERAMIC CHIP 470PF	5%	50V
C27	1-102-936-00	CERAMIC 3PF	0.25PF	50V
C28	1-163-181-00	CERAMIC CHIP 100PF	5%	50V
C29	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C101	1-163-008-00	CERAMIC CHIP 820PF	10%	50V
C102	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C103	1-124-431-00	ELECT 33MF	20%	4V
C104	1-124-438-00	ELECT 1MF	20%	50V
C105	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C106	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C107	1-136-171-00	FILM 0.33MF	5%	50V
C108	1-131-407-00	FILM 0.68MF	5%	50V
C109	1-136-165-00	FILM 0.1MF	5%	50V
C110	1-124-437-00	ELECT 2.2MF	20%	35V
C111	1-124-438-00	ELECT 1MF	20%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
C112	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C113	1-131-404-00	ELECT(SOLID) 0.22MF	20%	16V
C114	1-124-413-00	ELECT 220MF	20%	4V
C201	1-163-008-00	CERAMIC CHIP 820PF	10%	50V
C202	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C203	1-124-431-00	ELECT 33MF	20%	4V
C204	1-124-438-00	ELECT 1MF	20%	50V
C205	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C206	1-163-021-00	CERAMIC CHIP 0.01MF	5%	50V
C207	1-136-171-00	FILM 0.33MF	5%	50V
C208	1-131-407-00	FILM 0.68MF	5%	50V
C209	1-136-165-00	FILM 0.1MF	5%	50V
C210	1-124-437-21	ELECT 2.2MF	20%	35V
C211	1-124-438-00	ELECT 1MF	20%	50V
C212	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C213	1-131-404-00	ELECT(SOLID) 0.22MF	20%	16V
C214	1-124-434-00	ELECT 220MF	20%	4V
C301	1-124-432-00	ELECT 47MF	20%	4V
C302	1-124-431-00	ELECT 33MF	20%	4V
C303	1-124-431-00	ELECT 33MF	20%	4V
C304	1-124-431-00	ELECT 33MF	20%	4V
C305	1-131-385-00	TANTALUM 22MF	20%	6.3V
C306	1-124-435-00	ELECT 10MF	20%	6.3V
C307	1-124-430-00	ELECT 22MF	20%	4V
C308	1-124-435-00	ELECT 10MF	20%	6.3V
C309	1-136-165-00	FILM 0.1MF	5%	50V
C310	1-124-413-00	ELECT 220MF	20%	4V
C311	1-124-434-00	ELECT 220MF	20%	4V
C312	1-131-385-00	TANTALUM 22MF	20%	6.3V
C313	1-124-413-00	ELECT 220MF	20%	4V
C314	1-124-430-00	ELECT 22MF	20%	4V
C316	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C401	1-136-165-00	FILM 0.1MF	5%	50V
C402	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C403	1-135-073-00	TANTAL. CHIP 0.33MF	10%	35V
C404	1-135-091-00	TANTAL. CHIP 1MF	10%	16V
C405	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C406	1-135-103-00	TANTAL. CHIP 3.3MF	10%	4V
C407	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
CF1	1-567-177-00	FILTER, CERAMIC		
CF2	1-567-245-11	FILTER, CERAMIC		
CF3	1-567-245-11	FILTER, CERAMIC		
CF4	1-567-164-00	VIBRATOR, CERAMIC		
CV1	1-151-453-00	CAP, TUNING, POLYETHYLENE		

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UA···: μA···, UPA···: μPA···, UPC···: μPC,
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ELECTRICAL PARTS

Ref.No.	Part No.	Description
D1	8-719-100-05	DIODE 1S2837
D2	8-719-101-06	DIODE SR106D
D3	8-719-100-03	DIODE 1S2835
D301	8-719-101-06	DIODE SR106D
D302	8-719-100-05	DIODE 1S2837
D304	8-719-100-03	DIODE 1S2835
D305	8-719-100-03	DIODE 1S2835
D401	8-719-908-30	DIODE DA106K
FL1	1-235-171-00	FILTER, BAND PASS
HP101	8-825-507-11	HEAD (PP227-3602H)
IC1	8-759-908-89	IC CX20029
IC301	8-759-910-18	IC BA3304F
IC302	8-759-908-08	IC CX20085
IC303	8-759-200-95	IC TA7688F
IC401	8-759-700-75	IC NJM2901MB
J301	1-507-850-00	JACK, EXTENTION POWER
J302	1-507-924-11	JACK
L1	1-405-989-00	COIL, OSC
L2	1-459-418-00	COIL (WITH CORE)
L3	1-459-520-11	COIL (WITH CORE)
L4	1-410-029-11	MICRO INDUCTOR 47UH
L5	1-402-064-11	ANTENNA, FERRITE-ROD (MW)
L301	1-409-377-11	COIL, TRAP
L901	1-462-209-00	COIL, MOTOR (STATOR)
Q1	8-729-900-98	TRANSISTOR DTC143TK
Q2	8-729-900-98	TRANSISTOR DTC143TK
Q301	8-729-901-46	TRANSISTOR DTA114YK
Q302	8-729-900-98	TRANSISTOR DTC143TK
Q303	8-729-900-52	TRANSISTOR DTC114YK
Q304	8-729-901-46	TRANSISTOR DTA114YK
Q305	8-729-901-04	TRANSISTOR DTA114EK
Q306	8-729-216-22	TRANSISTOR 2SA1162
Q307	8-729-900-52	TRANSISTOR DTC114YK
Q308	8-729-100-66	TRANSISTOR 2SC1623
Q309	8-729-100-66	TRANSISTOR 2SC1623
Q310	8-729-901-46	TRANSISTOP DTA114YK
Q311	8-729-900-52	TRANSISTOR DTC114YK
Q312	8-729-900-98	TRANSISTOR DTC143TK
Q401	8-729-100-66	TRANSISTOR 2SC1623
Q402	8-729-216-22	TRANSISTOR 2SA1162
Q403	8-729-100-66	TRANSISTOR 2SC1623
Q404	8-729-900-51	TRANSISTOR DTA114TK
Q405	8-729-100-66	TRANSISTOR 2SC1623
Q406	8-729-900-52	TRANSISTOR DTC114YK
Q407	8-729-100-66	TRANSISTOR 2SC1623

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q408	8-729-101-07	TRANSISTOR 2SB798			
Q409	8-729-100-66	TRANSISTOR 2SC1623			
Q410	8-729-216-22	TRANSISTOR 2SA1162			
Q411	8-729-100-66	TRANSISTOR 2SC1623			
Q412	8-729-216-22	TRANSISTOR 2SA1162			
Q413	8-729-100-66	TRANSISTOR 2SC1623			
Q414	8-729-101-07	TRANSISTOR 2SB798			
R1	1-216-036-00	METAL CHIP	300	5%	1/10W
R2	1-216-093-00	METAL CHIP	68K	5%	1/10W
R3	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R4	1-216-017-00	METAL CHIP	47	5%	1/10W
R6	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R7	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R8	1-216-296-00	METAL CHIP	0	5%	1/8W
R9	1-216-244-00	METAL CHIP	82K	5%	1/8W
R10	1-247-879-00	CARBON	100K	5%	1/6W
R13	1-216-296-00	METAL CHIP	0	5%	1/8W
R14	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R15	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R101	1-216-089-00	METAL CHIP	47K	5%	1/10W
R102	1-216-109-00	METAL CHIP	330K	5%	1/10W
R103	1-216-224-00	METAL CHIP	12K	5%	1/8W
R104	1-216-228-00	METAL CHIP	18K	5%	1/8W
R105	1-216-036-00	METAL CHIP	300	5%	1/10W
R106	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R107	1-216-222-00	METAL CHIP	10K	5%	1/8W
R108	1-216-052-00	METAL CHIP	1.3K	5%	1/10W
R110	1-216-099-00	METAL CHIP	120K	5%	1/10W
R111	1-216-017-00	METAL CHIP	47	5%	1/10W
R112	1-216-049-00	METAL CHIP	1K	5%	1/10W
R113	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R201	1-216-089-00	METAL CHIP	47K	5%	1/10W
R202	1-216-109-00	METAL CHIP	330K	5%	1/10W
R204	1-216-228-00	METAL CHIP	18K	5%	1/8W
R205	1-216-036-00	METAL CHIP	300	5%	1/10W
R206	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R207	1-216-222-00	METAL CHIP	10K	5%	1/8W
R208	1-216-052-00	METAL CHIP	1.3K	5%	1/10W
R209	1-216-224-00	METAL CHIP	12K	5%	1/8W
R210	1-216-099-00	METAL CHIP	120K	5%	1/10W
R211	1-216-017-00	METAL CHIP	47	5%	1/10W
R212	1-216-049-00	METAL CHIP	1K	5%	1/10W
R213	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R301	1-216-017-00	METAL CHIP	47	5%	1/10W
R302	1-216-222-00	METAL CHIP	10K	5%	1/8W
R303	1-216-036-00	METAL CHIP	300	5%	1/10W

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R304	1-216-049-00	METAL CHIP	1K	5%	1/10W
R305	1-216-089-00	METAL CHIP	47K	5%	1/10W
R306	1-216-073-00	METAL CHIP	10K	5%	1/10W
R307	1-216-121-00	METAL CHIP	1M	5%	1/10W
R308	1-216-121-00	METAL CHIP	1M	5%	1/10W
R309	1-216-097-00	METAL CHIP	100K	5%	1/10W
R310	1-216-049-00	METAL CHIP	1K	5%	1/10W
R311	1-216-001-00	METAL CHIP	10	5%	1/10W
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W
R314	1-216-093-00	METAL CHIP	68K	5%	1/10W
R320	1-216-296-00	METAL CHIP	0	5%	1/8W
R321	1-216-296-00	METAL CHIP	0	5%	1/8W
R401	1-216-089-00	METAL CHIP	47K	5%	1/10W
R402	1-216-097-00	METAL CHIP	100K	5%	1/10W
R403	1-216-093-00	METAL CHIP	68K	5%	1/10W
R404	1-216-103-00	METAL CHIP	180K	5%	1/10W
R405	1-216-093-00	METAL CHIP	68K	5%	1/10W
R406	1-216-084-00	METAL CHIP	30K	5%	1/10W
R407	1-216-079-00	METAL CHIP	18K	5%	1/10W
R408	1-216-085-00	METAL CHIP	33K	5%	1/10W
R409	1-216-092-00	METAL CHIP	62K	5%	1/10W
R410	1-216-049-00	METAL CHIP	1K	5%	1/10W
R411	1-216-085-00	METAL CHIP	33K	5%	1/10W
R412	1-216-033-00	METAL CHIP	220	5%	1/10W
R413	1-216-097-00	METAL CHIP	100K	5%	1/10W
R414	1-216-097-00	METAL CHIP	100K	5%	1/10W
R415	1-216-097-00	METAL CHIP	100K	5%	1/10W
R416	1-216-097-00	METAL CHIP	100K	5%	1/10W
R417	1-216-039-00	METAL CHIP	390	5%	1/10W
R418	1-216-049-00	METAL CHIP	1K	5%	1/10W
R419	1-216-001-00	METAL CHIP	10	5%	1/10W
R420	1-216-094-00	METAL CHIP	75K	5%	1/10W
R421	1-216-107-00	METAL CHIP	270K	5%	1/10W
R422	1-216-097-00	METAL CHIP	100K	5%	1/10W
R423	1-216-052-00	METAL CHIP	1.3K	5%	1/10W
R424	1-216-107-00	METAL CHIP	270K	5%	1/10W
R425	1-216-094-00	METAL CHIP	75K	5%	1/10W
R426	1-216-001-00	METAL CHIP	10	5%	1/10W
R427	1-216-049-00	METAL CHIP	1K	5%	1/10W
R428	1-216-039-00	METAL CHIP	390	5%	1/10W
R429	1-216-097-00	METAL CHIP	100K	5%	1/10W
R430	1-216-097-00	METAL CHIP	100K	5%	1/10W
R431	1-216-097-00	METAL CHIP	100K	5%	1/10W
R432	1-216-090-00	METAL CHIP	51K	5%	1/10W

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R433	1-216-085-00	METAL CHIP	33K	5%	1/10W
R434	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R435	1-216-295-00	METAL CHIP	0	5%	1/10W
R436	1-216-295-00	METAL CHIP	0	5%	1/10W
RV101	1-230-325-11	RES, ADJ, CARBON 10K			
RV201	1-230-325-11	RES, ADJ, CARBON 10K			
RV301	1-230-327-11	RES, VAR, CARBON 10K/10K			
RV401	1-230-326-11	RES, ADJ, CARBON 100K			
S1	1-554-707-11	SWITCH, SLIDE			
S101	1-554-671-21	SWITCH, SLIDE			
S301	1-554-671-21	SWITCH, SLIDE			
S302	1-554-705-11	SWITCH, SLIDE			
S401	1-554-586-00	SWITCH, LEAF			
T1	1-404-525-11	TRANSFORMER, IF			
TH401	1-806-718-00	THERMISTOR			

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English

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